

## OCEAN GALES AND STORMS, JUNE, 1931

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Highest force of wind and direction	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Aracataca, Br. S. S.	Rotterdam	Tela, Honduras.	39 16 N	32 20 W	June 1	Noon 2	June 3	29.63	SSW	SSW, 9	NW	SSW, 9	SSW-NW.
Ogontz, Am. S. S.	Passajes, Spain.	New Orleans.	35 20 N	38 40 W	June 6	Mdt. 6	June 7	29.75	SW	W, 6	W	W, 8	SW-W-WNW.
Cripple Creek, Am. S. S.	New Orleans.	Liverpool	38 47 N	64 42 W	June 9	2 p. 9	June 9	29.48	E	E, 10	S	E, 10	E-SE-S.
Marie Leonhardt, Ger. S. S.	New York	London	40 33 N	60 23 W	do	— 9	do	29.88	E	E, 9	E	E, 9	Steady.
Berlin, Ger. S. S.	Bremerhaven	New York	48 43 N	22 15 W	June 14	Mdt. 14.	June 15	29.31	SSW	SSW, 10	NW	SSW, 10	SSW-W.
Nieuw Amsterdam, Du. S. S.	Rotterdam	do	50 43 N	15 03 W	June 15	8 a. 15.	do	29.47	SSW	SSW, 8	WSW	SSW, 8	SSW-WSW.
Tulsa, Am. S. S.	Savannah	Liverpool	39 49 N	53 38 W	June 21	2 a. 21.	June 21	29.72	SSW	SSW, 8	SSW	SSW, 8	Steady.
Choluteca, Hond. S. S.	Baltimore	Tela, Honduras.	20 32 N	85 38 W	June 25	7 a. 25.	June 25	29.59	E	SE, 6	SE	SE, 8	Steady.
Okeania, Gr. S. S.	do	Lisbon	39 54 N	51 12 W	June 24	Noon 25.	do	30.02	SSW	SW, 6	NW	SW, 8	S-SW.
San Tirso, Br. S. S.	Minatitlan	Manchester	40 25 N	55 14 W	June 27	3 p. 28.	June 28	29.71	WSW	S, 6	S	SSE, 8	Steady.
NORTH PACIFIC OCEAN													
Emma Alexander, Am. S. S.	San Francisco	Seattle	41 14 N	124 33 W	June 3	2 p. 3.	June 3	29.98	NW	—, 8	NW	NW, 9	WNW-NW..
Iowa, Am. S. S.	Japan	San Francisco	41 48 N	157 37 E	June 4	8 p. 4.	June 5	29.36	ENE	NE, 7	NW	WNW, 8	NE-N-NW.
Paris Maru, Jap. S. S.	Seattle	Yokohama	52 53 N	149 02 W	do	Mdt. 4.	do	29.18	S	S, 8	SSW	S, 9	3 pts.
Granville, Pan. M. S.	Shanghai	San Pedro	45 54 N	163 30 W	June 10	8 p. 10.	June 14	29.54	E	E, 8	WNW	WNW, 9	SE-S.
City of Elwood, Am. M. S.	do	Honolulu	31 30 N	154 08 E	June 11	5 a. 12.	June 12	29.20	SE	S, —	SW	S, 8	SE-S.
Tajon, Am. S. S.	Yokohama	San Pedro	42 00 N	139 00 W	do	— 13.	June 13	29.37	SE	NE, 8	W	—, 9	SE-S.
Golden Tide, Am. S. S.	Hong Kong.	San Francisco	34 24 N	140 16 E	June 12	— 13.	June 12	29.60	ESE	S, 8	SSE, 9	S, 8	ESE-S.
Olympia, Am. S. S.	Orient	do	43 16 N	169 50 W	do	— 13.	June 14	29.44	E	S, 8	SW	S, 8	SE-S-SW.
City of Victoria, Can. S. S.	Japan	do	39 48 N	168 32 W	June 16	Noon 16.	June 17	29.74	SE	SE, 7	SSW	—, 8	SE-S.
Seattle, Am. S. S.	Celebes	do	39 15 N	157 55 W	June 22	5 a. 23.	June 23	29.79	S	SW, 6	SW	SW, 8	S-SW-W.
Iowa, Am. S. S.	Los Angeles.	Balboa	16 59 N	103 16 W	June 23	6 a. 23.	do	29.75	SE	SE, 6	SSE	E, 8	SE-E
Blythmoor, Br. S. S.	Vancouver	Panama	19 45 N	106 29 W	June 24	10 p. 24.	June 24	29.74	NW	E, 8	SE	E, 8	N-E-SE.

<sup>1</sup> Barometer uncorrected.

## NORTH PACIFIC OCEAN

By WILLIS E. HURD

**Atmospheric pressure.**—During June, 1931, the Aleutian LOW was slightly deeper than normal for the month, especially to the westward of the peninsula of Alaska, where also the pressure was lower than in the previous month, thus showing an early summer intensification. On the average a distinct center of 29.81 inches barometer extended from the Gulf of Alaska westward to beyond Dutch Harbor. During strongest developments of the LOW the barometer fell to a minimum of 29.10 inches at Kodiak on the 5th, and to 29.02 at Dutch Harbor on the 15th.

The North Pacific HIGH covered an extensive area in middle latitudes over the eastern half of the ocean throughout the month, its eastern extremity lying along the coast of the United States except on five or six days, when the northern LOW intervened by extending unusually far southward. Over the western part of the ocean in these latitudes pressure was fluctuating and unstable.

The following table gives barometric data for several island and coast stations in west longitudes, including Point Barrow on the Arctic Ocean:

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, at indicated hours, North Pacific Ocean and adjacent waters, June, 1931

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Point Barrow <sup>1</sup>	29.99	0.00	30.20	8th <sup>2</sup>	29.74	11th.
Dutch Harbor <sup>1</sup>	29.81	—0.09	30.26	13th	29.02	15th.
St. Paul <sup>1</sup>	29.88	+0.02	30.30	13th	29.12	15th.
Kodiak <sup>1</sup>	29.81	—0.10	30.16	1st <sup>3</sup>	29.10	5th.
Midway Island <sup>1</sup>	30.04	—0.01	30.16	19th <sup>3</sup>	29.74	3d.
Honolulu <sup>4</sup>	30.06	+0.02	30.15	17th	29.93	6th.
Juneau <sup>4</sup>	29.93	—0.08	30.32	3d	29.48	21st.
Tatoosh Island <sup>4</sup>	29.99	—0.06	30.25	4th	29.73	25th.
San Francisco <sup>4</sup>	29.96	0.00	30.11	16th	29.81	4th.
San Diego <sup>4</sup>	29.92	+0.03	30.03	15th	29.74	22d.

<sup>1</sup> P. m. observations only used in averages; a. m. and p. m. in extremes.

<sup>2</sup> For 29 days.

<sup>3</sup> And on other date or dates.

<sup>4</sup> A. m. and p. m. observations.

<sup>5</sup> Corrected to 24-hour mean.

**Depressions and gales.**—June witnessed comparatively quiet weather over the entire North Pacific, with an absence of tropical storms, as well as of gales exceeding 9 in force, so far as now indicated by reports.

In east longitudes, particularly toward the Asiatic coast, numerous tropical and extratropical depressions gathered, those in lower waters dissipating or moving out of the field without much show of energy. In the Japanese area only one cyclone of the month is indicated as displaying marked strength. This skirted the lower coast of Japan and caused gales of force 8 to 9 on the 12th from Kiushu Island to southeastern Honshu.

A depression lying north of Midway Island on June 1 moved into the Aleutian region on the 2d, and thence into the Gulf of Alaska on the 4th and 5th, where isolated southerly gales of force 9 were reported near 53° N., 148° W., during the time of greatest intensification of cyclonic energy over the northeastern part of the ocean for the month.

From the 11th to 14th a series of gales of force 8 to 9 was encountered along the northern routes between about latitudes 40° and 50° N., longitudes 135° and 170° W. These were caused by two depressions, the more easterly of which lay south of the Gulf of Alaska for two or three days, becoming more and more restricted in area until, as a small LOW, it entered the Washington-Oregon coast on the 15th. The other depression entered the Aleutian area from the southwest on the 13th, causing fresh gales along its eastern boundary on that date. By the 15th, then central in the southern part of the Bering Sea, it acquired considerable depth, giving the lowest pressure of the month over the central Aleutians, and a reported gale of force 9 from the west nearly south of Atka Island.

On the 3d and 4th of the month there was a strong northwesterly air current off the American coast between Tatoosh Island and Eureka, blowing along the eastern edge of the HIGH and rising in force at times to that of a fresh to strong gale.

In the Mexican coast region, during the prevalence of slight depressions over lower and upper Mexico, a fresh